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NASA Procedural Requirements

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Subject: NASA Enterprise Architecture Procedures

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Appendix B: Enterprise Architecture Service Review (EASR) Process

B.1 Introduction

a. Appendix B outlines the process to prepare a NASA service (SS or MLC) for an EASR. The purpose of an EASR is to fully describe the ?As-Is? or current state, the envisioned near-term ?To-Be? state, and the recommendations for actions to transform to the future state. The review is created with a clear articulation of customer requirements in every phase. This review allows key sponsors, executives, and stakeholders to assess the extent and effectiveness of that service against the program goals it supports.

b. An EASR is necessary in order to consider sustained investment or modification or enhancement proposals for any service (SS or MLC) that meets the funding thresholds established in NPR 2830.1, Chapter 7. The review, prepared primarily from information already available in the service operating plans and documents, is presented to the CEA for approval in order to move forward for funding consideration. The goal of any EASR is to ensure investments in sustained operations, or which are undergoing modifications, upgrades or enhancements, have a fundamentally sound business foundation, and are aligned with Agency requirements. Additional EASR?s may be conducted throughout the life cycle of any service.

B.2 Need and Benefits

a. Executive management and stakeholders have a business requirement to use EA

principles for analysis of investments in sustaining, or ongoing, operational service portfolios. The EASR provides the deep-level analysis that is used to determine the following:

- (1) How selective IT services might scale to effectively support a broader user community with minimal additional investment.
- (2) Thorough analysis of the ?As-Is? state to reveal the extent of today?s capabilities.
- (3) Analysis of customer densities and input as indicators for what customers may want as a part of our future ?To-Be? state.
- (4) Gap analysis in order to build action plans to steer toward the near-term ?To-Be? state.

b. Anticipated benefits that the executive sponsor, supervisors, and service managers can expect following the completion of the EAPR are:

- (1) A thorough understanding of the current state in order to transition toward the future state.
- (2) Better data for Product Development Life Cycle (PDLC) management analysis for investment prioritization, which takes into consideration:
 - (i) Initiation of new services.
 - (ii) Sunset Legacy services.
 - (iii) Evaluation of services in various stages of the life cycle.
- (3) Thorough understanding of current state in order to respond quickly to external influences by considering:
 - (i) Funding reductions.
 - (ii) Policy directives.
 - (iii) Unfunded mandates.
 - (iv) Executive resource redirection.
- (4) A recommended list of potential projects for executive decision that create the next near-term ?To-Be? state from analysis of the data.
- (5) Documentation of completed and approved service reviews which constitute the manager?s ?As-Is? state. These are auditable EA artifacts.
- (6) Good materials for funding requests and provides details for explanation to customers, executives, and other organizations such as NASA HQ, OIG, GAO, OMB, and Congress.
- (7) Clear understanding of the high-level view and managed interfaces for the services portfolio. This will also provide information for the manager to assess the extent and effectiveness of systems and services against program goals.
- (8) Discovery of how top-level customers may be representing services to atomic (root or end) customers. (If we do not understand who the atomic customer is, we do not know who is representing our services or how our services are being represented.)

(9) Use the results to refocus a service portfolio. The focus EA reviews help projects and sponsors to gain insight that can be used for future state modeling and decision-making.

(10) Assurance that investments are mapped to the organizational business goals, the 18 NASA Strategic Objectives, and the FEA BRM ?Services for Citizens? Lines of Business.

(11) Ability depends on standard tools and processes, thereby reducing complexity and redundancy.

B.3 Instructions

a. Prepare a concise PowerPoint briefing that answers the following categories of questions and include as much detail as possible. All required documents shall also be submitted. The content used to prepare the submitted briefing should be derived from information already contained in existing documentation such as program plans, project plans, and FAD?s. There is no need for redundancy in the submitted response. If a question or element is answered in any other part of the submitted response it need not be repeated, but should be referenced for ease of evaluation. Samples of completed EA project review briefings are available from the CEA or designee.

b. Successful reviews include the following actions:

- (1) Identify your team members early on.
- (2) Identify a single point of contact to represent the service portfolio.
- (3) Prepare a schedule.
- (4) Plan a minimum of two meetings per week.
- (5) Have a PowerPoint specialist available.

B.4 EASR Services Decomposition and Reference Architectures

a. The appropriate starting point for an EASR is to conduct a services decomposition and prepare a reference architecture for each service area. The services decomposition activity fully delineates each discrete service for a given services portfolio and defines each discrete service. For example:

- (1) Mainframe Hosting: The NASA Data Center (NDC) provides industry standard mainframe hosting for applications.
- (2) Disaster Recovery: The NDC provides industry standard business continuity and recoverability for both mainframe and midrange platforms.

b. A fully decomposed services portfolio assures the services portfolio manager that all services are identified and understood, and it provides all EASR development participants with a common starting model.

c. A reference architecture is a graphically represented, high-level system overview that is intentionally free of implementation details. It generally includes high-level descriptions of the system components, a definition of relationships between components, definitions of relationships between system components and elements external to the system, and

identification of performance drivers and capacity requirements. Where applicable, a reference architecture also provides high-level definitions of key data sources, data stores produced, and interfaces between the system components.

d. This notional system view allows EASR development participants to quickly review and understand the composition and functionality of a discrete service area, thereby improving their understanding of the overall services portfolio.

B.5 EASR Structure

B.5.1 Services Portfolio Introduction and Overview

a. This section provides the direction to create the charts to describe and discuss the entire services portfolio overview. The services portfolio shall:

- (1) Provide a brief description/introduction of the services portfolio.
- (2) Describe the guiding principles, vision, and values for the service.
- (3) Identify executive sponsors and managers.
- (4) Identify the services within the services portfolio.
- (5) Identify the services from a customer's viewpoint. Also, identify the full set of services offered under the services portfolio from the customer's perspective.
 - (i) List the services each customer uses today.
 - (ii) Show how the customer uses each service (i.e., strategic communications).
 - (iii) Identify the criticality of each service to the customer.
- (6) Provide a matrix showing customer densities across the services including:
 - (i) Full portfolio demand charts.
 - (ii) Risk of demand outstripping capacity.
 - (iii) Customer density per service.
- (7) Describe any facilities common across the entire services portfolio.
- (8) Provide an organizational chart for operations, maintenance, and support.

B.5.2 Individual Services Decomposition

a. This section details the specific 'As-Is' state, desired 'To-Be' state, and identified transitional actions for each individual service under the services portfolio. Each individual service identified under the services portfolio will need the charts that provide the information below.

b. Thoroughly document each Service 'As-Is' in the portfolio for executive review. Fully describe each service to include:

- (1) Provide a brief executive description of the service.
- (2) Provide an overview of the customer densities at each of the 11 Centers and 4 Mission Directorates. Also, list users outside the Agency or within programs/projects that

do not fall under the 11 Centers or 4 Mission Directorates.

(3) Describe the systems, applications, equipment, and other technologies used to create and maintain the delivery of the service.

(4) Describe the capacity of the service. Show the relationship between capacity and demand (customer density). Show past, current, and future demand trends.

(5) Provide greater detail about the customers of each service in the portfolio.

(i) Identify the atomic (root or end) customers.

(ii) Identify the customers and how they are affected by service interruptions or technology migrations.

(iii) Determine the cost to the customer and ripple effect of a service interruption.

(iv) Decompose the funding sources, if more than one exists.

(v) Discuss how customers of this service use it in their business.

(6) Identify the full set of services offered under this individual service from the customer's perspective.

(i) Show how the customer uses the service (i.e., strategic communications).

(ii) Identify the criticality of each service to the customer.

(7) What the current supply capacity is for this service based on the current configuration (i.e., today's As-Is?).

(i) Describe the supply or capacity for each service (i.e., service ability to deliver).

(ii) Identify infrastructure capacity to support each service (e.g., building, power, HVAC).

(iii) Determine the maximum number of customers each service can support.

(8) Define the demand for each current service within the portfolio, including:

(i) Demand by specific customer (atomic, root or end customer).

(ii) Demand by Center.

(iii) Demand by mission directorate/program/project/activity/task.

(9) Define the full set of customers and stakeholders for each service:

(i) Identify the owners of the data supported by each service.

(ii) Determine which communities (served) are dependent on each service.

(iii) Determine which businesses are supported by each service.

(iv) Identify the industry partners and developers for each service, if any.

c. Clearly define the near-term 'To-Be' state through customer driven requirements. Each individual service identified under the services portfolio will need the charts to provide the following information:

(1) Define the portfolio service delivery model to drive down cost, including:

- (i) Capacity demand for capacity and timeline.
- (ii) Service models for each service, if different.
- (iii) Peak versus sustained performance.
- (2) Forecast services to create the service portfolio ?To-Be? model, including:
PDLC Management - evaluate all services concerning life cycle.
- (i) Initiate new services.
- (ii) Sunset Legacy services.
- (iii) Define services with low customer density.
- (iv) Service cost pools.
- (v) Service recovery pools.
- (vi) Service pricing model.

d. Individual Service Analysis and Recommended Actions. This section provides the direction to create the charts that describe and discuss the analysis and transition plans to take the individual service from the ?As-Is? state to the ?To-Be? state. This section generates analysis and recommendations specific to each individual service under the services portfolio. The data gathered in these charts for each individual service will ultimately roll up to help create the service portfolio summary section. Each individual service identified under the services portfolio will need the charts to provide the information below.

- (1) ?To-Be? versus ?As-Is? supply/demand delta analysis (charts), including:
 - (i) Capability to deliver new work.
 - (ii) Identify any impediments in service delivery model.
 - (iii) Recommended list of actions for executive decision for each service.
- (2) Define the risks associated with each service in the portfolio, including:
 - (i) Aging infrastructure (e.g., building age, fire suppression, HVAC, and power).
 - (ii) Depth of critical resources (i.e., knowledge management).
 - (iii) Funding.
 - (iv) Competition.
 - (v) Internal rates.

B.5.3 Services Portfolio Summary and Action Plan

a. This section provides the direction to create the charts that describe and discuss the analysis and transition plans to take the entire services portfolio from the ?As-Is? state to the ?To-Be? state. This section generates analysis and recommendations for executive approval to identify potential projects, sunset activities, activities or tasks to transform the services portfolio. The resultant list of identified actions shall be prioritized for discussion.

b. Provide analysis of the ?To-Be? versus ?As-Is? supply/demand delta analysis for the entire services portfolio, including:

- (1) Capability to deliver new work.
- (2) Impediments in service delivery model.
- (3) Definition of the risks associated with the services portfolio, including:
 - (i) Aging infrastructure (e.g., building age, fire suppression, HVAC, and power).
 - (ii) Depth of critical resources (e.g., knowledge management).
 - (iii) Funding.
 - (iv) Competition.
 - (v) Internal rate.
 - (vi) Other agencies (i.e., federalization).
 - (vii) External commercial capabilities.

c. Compile a recommended list of actions for executive decision, including:

- (1) Development of alternatives analysis.
- (2) Identification of actions that affect the One NASA Vision.
- (3) Prioritization of actions for CPIC consideration.
 - (i) Validation that the costs for recommended actions are accurate.
 - (ii) Prioritization of the actions/costs as required by the CPIC process. Examples are available from the EA team.

d. Take all of the potential actions described throughout the EASR package and create an action plan. The action plan shall:

- (1) Show a full timeline to cover all intended actions.
- (2) Have scheduled dates and milestones.
- (3) Include success criteria.
- (4) Indicate review cycle (i.e., monthly, quarterly, etc.).
- (5) Identify the owners for each action, as well as the owner for the overall plan.

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